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Attorney Docket No. 14-017

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The applicants thank the examiner for acknowledging applicants' claim for foreign priority and reception of the certified copy of the foreign priority document that was submitted on 28 July 2003. The applicants also thank the examiner for having returned an initialed copy of the PTO 1449 that was submitted on 28 July 2003.

Claims 1 - 19 are pending. Claims 9 - 11 and 14 - 19 have been withdrawn. New claim 20 is presented for examination. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claims 1 - 3 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,875,766 to Ozawa in view of Japanese Patent Publication No. 11-048822 to Tanaka *et al.* (hereafter: Tanaka). The applicants respectfully request that this rejection be withdrawn for the following reasons.

Claim 1 recites *inter alia* the novel embodiment disclosed, for example, on pgs. 13 - 16 in which an automatic brake device comprises: a braking-force application unit 2 or 3 that applies a braking force, on a wheel of a vehicle on the basis of a brake actuating signal; an intended direction detecting unit 8 that detects an intended movement direction in which a driver intends to move the vehicle; a starting intention detecting unit 7 that detects an operation input based on a starting intention of the driver to move the vehicle from a stopped state such that a speed of the vehicle becomes greater than 0 km/h; a movement direction detecting unit 5 or 9 that detects an actual movement direction of the vehicle; and a brake control unit 1 that outputs the brake actuating signal.

As further disclosed on, for example, pg. 18 - 30 the brake control unit 1 executes: a halt-maintenance mode (S13) for driving the braking-force application unit 2 or 3 for application of a

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halt-maintenance braking force on the wheel to maintain the vehicle in a halted state, a movement direction detection mode (S122 - S126) for terminating the halt-maintenance mode at a time when the starting intention detecting unit 7 detects the starting intention of the driver, and for receiving input of the actual movement direction from the movement direction detecting unit 5 or 9; and an auxiliary brake mode (S130 - S192) for outputting the brake actuating signal for controlling the braking force on the basis of a relationship between the intended movement direction detected by the intended direction detecting unit 7 and the actual movement direction.

That is, the automatic brake device enables a vehicle to smoothly begin traveling based upon a starting intention of the driver to operate a vehicle from a stopped state to a moving state by, for example, adjusting the braking force. Further, the automatic brake device can prevent the vehicle from moving backward when the driver has displayed an intention to stop by applying brake force.

Ozawa discloses a supercharging device for a vehicle engine, for use in construction machines. When the vehicle is at a halt and when the vehicle is to move, a brake 36 is applied to a power transmission system 20 of the vehicle to increase total power output by the engine 1 by using the differential planetary gear device 10; the power output is directed to the mechanical supercharger 40 to rotate the mechanical supercharger 40; the brake 36 is released upon receipt of a start command; the engine power output is distributed by the differential planetary gear device 10 for driving the mechanical supercharger 40 and for propelling the vehicle; and the vehicle is propelled and accelerated.

The examiner has asserted that the brake 36 shown in Fig. 1 discloses a braking-force application unit that applies a braking force, on a wheel of a vehicle on the basis of a brake actuating signal as recited in claim 1. Although the brake 36 is applied to a wheel 35, the wheel

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35 is part of the power transmission system 20, rather than the front and rear wheels on which the vehicle travels. Particularly, the wheel 35 receives driving force from the driving force transmission system 20. That is, the braking operation disclosed in Ozawa is for stopping a drive system in order to transmit output of the engine to the mechanical supercharger, rather than for adjusting braking force based on starting intention of the driver to smoothly start vehicle travel.

Further, assuming *arguendo* that the brake 36 of Ozawa suggests a braking-force application unit, Ozawa still fails to teach or suggest that the supercharging device includes a starting intention detecting unit that detects an operation input based on a starting intention of the driver to move the vehicle from a stopped state such that a speed of the vehicle becomes greater than 0 km/h; and a brake control unit executing a movement direction detection mode for terminating the halt-maintenance mode at a time when the starting intention detecting unit detects the starting intention of the driver, and for receiving input of the actual movement direction from the movement direction detecting unit.

Further, Ozawa also fails to disclose a movement direction detecting unit that detects an actual movement direction of the vehicle. The examiner asserted that the vehicle speed detection sensor disclosed on col. 2, lines 40 - 45 discloses such a movement direction detecting unit. However, the vehicle speed detection sensor generates only a vehicle speed signal rather than an actual movement *direction* of the vehicle.

Ozawa also discloses a compressor 42 that generates drive torque which can be used for speed reduction, and can provide an engine braking increased state. However, and as admitted by the Examiner, Ozawa fails to teach or suggest that the compressor 42 controls the braking force on the basis of a relationship between the intended movement direction detected by the intended direction detecting unit and the actual movement direction. Rather, Ozawa discloses

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that the compressor 42 generates the drive torque when the vehicle operator reduces speed by "moving the shift lever from third to second..."

The Examiner has cited Tanaka in order to cure the deficient teachings of Ozawa.

Tanaka discloses an electronic vehicle cruise control that includes direction means 105, 108 that direct an auxiliary brake 9 to be actuated when the actual vehicle speed detected by the actual vehicle speed detection means 21 is not lower than a target vehicle speed. However, Tanaka also fails to teach or suggest that the auxiliary brake 9 is actuated based upon a relationship between the intended movement direction detected by the intended direction detecting unit and the actual movement direction. Rather, Tanaka discloses actuating the auxiliary brake based upon a difference between intended and actual vehicle *speed*.

Further, Tanaka also fails to teach or suggest that the electronic vehicle cruise control includes a movement direction detecting unit that detects an actual movement direction of the vehicle, a starting intention detecting unit that detects an operation input based on a starting intention of the driver to move the vehicle from a stopped state such that a speed of the vehicle becomes greater than 0 km/h; and a brake control unit executing a movement direction detection mode for terminating the halt-maintenance mode at a time when the starting intention detecting unit detects the starting intention of the driver, and for receiving input of the actual movement direction from the movement direction detecting unit.

Therefore, because Ozawa and Tanaka fail to teach or suggest: a braking-force application unit that applies a braking force, on a wheel of a vehicle on the basis of a brake actuating signal; a starting intention detecting unit that detects an operation input based on a starting intention of the driver to move the vehicle from a stopped state such that a speed of the vehicle becomes greater than 0 km/h; a movement direction detecting unit that detects an actual

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movement direction of the vehicle; and a brake control unit executing a movement direction detection mode for terminating the halt-maintenance mode at a time when the starting intention detecting unit detects the starting intention of the driver, and for receiving input of the actual movement direction from the movement direction detecting unit, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. 103(a) be withdrawn.

Claims 2 – 3 and 5 depend from claim 1. Therefore, the rejection of these claims should be withdrawn for at least the above-mentioned reasons with respect to claim 1.

Further regarding claim 3, claim 3 recites the novel embodiment disclosed, for example, on, pgs. 20 - 24 in which the movement direction detecting unit detects, as the actual movement direction, a direction in which the vehicle moves when the braking force, which is greater than zero, is decreased at a predetermined initial pressure decrease gradient until the braking force is lower than the halt-maintenance braking force in the halt-maintenance mode. The braking force during movement direction detection is between the halt-maintenance braking force and zero. Particularly, even when the vehicle is moving, a braking force greater than zero continues to be applied. Therefore, it is possible to ensure driver safety during movement.

The examiner has asserted that because Ozawa teaches increasing the speed of the compressor 42, Ozawa obviously encompasses teaching determining movement direction when the brake force decreases such that the braking force is lower than the halt maintenance braking force.

However, Ozawa fails to teach or suggest decreasing the brake force at a predetermined initial pressure decrease gradient until the braking force is lower than the halt-maintenance braking force in the halt-maintenance mode. Rather, Ozawa merely discloses releasing the brake 36 from the engaged state. That is, the braking force applied to the brake 36 is not varied. In

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comparison, the brake 36 is either in an engage state or not. Accordingly, the rejection of claim 3 under 35 U.S.C. 103(a) be withdrawn.

Withdrawn claims 9 - 11 also depend from claim 1. Therefore, withdrawn claims 9 - 11 should also be allowed for the above-mentioned reasons with respect to claim 1.

The indication of allowable subject matter in claims 4, 6 - 8 and 12 - 13 is acknowledged and appreciated.

New claim 20 is presented for examination. Support for new claim 20 can be found on, for example, pg. 5, lines 6 - 12. Claim 20 further recites that the wheel to which the braking force is applied by the braking-force application unit is at least one of a front right wheel, front left wheel, rear right wheel and rear left wheel of the vehicle. In comparison, Ozawa discloses applying brake force to a wheel of a power transmission system 20. Further, claim 20 depends from claim 1. Therefore, new claim 20 should be in condition for allowance.

In view of the foregoing, the applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

If there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Deposit Account No. 50-1147.

Respectfully submitted,



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